

WHAT IS CLAIMED IS:

1. A memory cell comprising:
a semiconductor substrate having a first region and a second region of one
5 conduction type and a third region therebetween of an opposite conduction type; and
a gate insulating layer formed over said substrate, the gate insulating layer
having a first thickness formed over said first region and said second region, and a second
thickness formed over said third region.

10 2. A memory cell as in claim 1, wherein said first thickness is greater than
said second thickness.

3. A memory cell as in claim 1, wherein said first thickness is between
about 20 and 30 nm and wherein said second thickness is between about 8 and 11 nm.

5 4. A memory cell as in claim 1, wherein the electric field in a region of
overlap between said insulating layer and said first and said second regions is between
about 4 Mv/cm and 6 Mv/cm.

20 5. A memory cell as in claim 1, wherein the electric field in a region of
overlap between said insulating layer and said third region is between about 8 Mv/cm
and 11 Mv/cm.

25 6. A memory cell as in claim 1, wherein said gate insulating layer
comprises SiO₂.

7. A memory cell as in claim 1, further comprising a polysilicon
gate electrode.

8. A memory cell as in claim 1, further comprising a control gate.

9. A memory cell as in claim 1, further comprising an ONO stack.

10. A method for fabricating a memory cell, the method comprising:
providing a semiconductor substrate having a first region and a second
region of one conduction type and a third region therebetween of an opposite
conduction type;
forming a first portion of a gate insulating layer over said first region and
said second region; and
forming a second portion of said gate insulating layer over said
third region,
said first portion having a first thickness said second portion having a
second thickness.

11. A method as in claim 10, wherein said first thickness is greater than said
second thickness.

12. A method as in claim 10, wherein said first thickness is between about 20
and 30 nm and wherein said second thickness is between about 8 and 11 nm.